

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

26.07.2005

Applicant's or agent's file reference  
RSJ08429WO

## IMPORTANT NOTIFICATION

International application No.  
PCT/GB2004/001609

International filing date (day/month/year)  
14.04.2004

Priority date (day/month/year)  
17.04.2003

Applicant  
AKUBIO LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:



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**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>RSJ08429WO</b>	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. <b>PCT/GB2004/001609</b>	International filing date (day/month/year) <b>14.04.2004</b>	Priority date (day/month/year) <b>17.04.2003</b>	
International Patent Classification (IPC) or national classification and IPC <b>G01N27/00</b>			
Applicant <b>AKUBIO LIMITED et al.</b>			

<ol style="list-style-type: none"> <li>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</li> <li>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</li> <li>3. This report is also accompanied by ANNEXES, comprising: <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> <i>(sent to the applicant and to the International Bureau) a total of sheets, as follows:</i> <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> </li> <li>b. <input type="checkbox"/> <i>(sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</i></li> </ol> </li> </ol>
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<ol style="list-style-type: none"> <li>4. This report contains indications relating to the following items:</li> </ol>
<input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand <b>16.11.2004</b>	Date of completion of this report <b>26.07.2005</b>
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Duchatellier, M Telephone No. +31 70 340-2272



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2004/001609

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-24 as originally filed

**Drawings, Sheets**

1/7-7/7 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

- The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
- This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-24
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-24
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
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International application No.  
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**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 1). Reference is made to the following documents:

D1: WO-A-0102857

D2: US-A-5042288

D3: US-A-6293136

D4\*: US-A-4872765

\*D4 is cited in D2 (column 2, line 6)

- 2). Preliminary remark:

The subject-matter of claim 1 is not clear in the sense of Article 6 PCT for the following reasons:

In claim 1 "the transducer oscillates at two frequencies simultaneously, one of these causing the transducer to oscillate the surface and the other being supplied as an output to the analyser". The skilled man understands that the surface oscillates only at one frequency. But from the description, it is obvious that the oscillator excites two resonant frequencies of the quartz crystal (cf. page 5, lines 23-28 and figure 1). Consequently, the surface oscillates also at two frequencies.

Furthermore, the above-mentioned lack of clarity notwithstanding, the subject-matter of claim 1 is not inventive in the sense of Article 33(3) PCT, and therefore the criteria of Article 33(1) PCT are not met.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

an apparatus for separating an analyte from a mixture or for detecting an analyte or for determining the affinity, or a property related to affinity, between partners (cf. claim 1) comprising.

a) a surface having the analyte or one of the binding partners immobilised thereon, in use;

b) a transducer for oscillating the surface;

c) a controller connected to the transducer for varying the amplitude and/or frequency of the oscillation to cause a dissociation event; and,

d) an analyser connected to the transducer for detecting an oscillation of the transducer due to the dissociation event.

The subject-matter of claim 1 differs only in that the controller includes an oscillator connected in a resonant circuit with the transducer such that the transducer

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oscillates at two frequencies simultaneously.

The problem to be solved is to generate two frequencies (such as in D1) without an external frequency synthesiser which increases the complexity of the system (cf. present description page 2, lines 7-11). To eliminate the need of an external frequency synthesiser, a multi-mode oscillator can be used (as disclosed in claim 1). Such an oscillator is known from D4 (cf. column 2, line 57-column 3, line 68 and figures 1, 2).

Consequently, the skilled man having in mind the state of the art as disclosed in D1 would require no effort of inventive significance to use a multi-mode oscillator for eliminating the need of an external frequency synthesiser, and no inventive step can be seen in the subject-matter of claim 1.

**3). Independent method-claim 17.**

3.1 For similar reasons as put forward concerning claim 1, the subject-matter of claim 17 is not clear.

3.2 In claim 17, the surface is oscillating at two frequencies, but nothing in the claim suggests a solution to the problem of the external frequency synthesiser. Consequently, claim 17 does not meet the requirement following from Article 6 PCT in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

3.3 Furthermore, For similar reasons as put forward concerning claim 1, the subject-matter of claim 17 is not inventive.

**4). Dependent apparatus-claims 2-16.**

Dependent apparatus-claims 2-16 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step:

4.1 Claims 2-5: known from D2, in the light of D4 (cf. column 2, lines 45-57).

4.2 Claims 6-13: known from D1 (cf. claims 1-12).

4.3 Claim 14: known from D2, in the light of D4 (cf. point 2, above).

4.4 Claims 15, 16: the use of two bandpass filters and of a digitiser does not seem inventive.

**5). Dependent method-claims 18-24.**

The additional features of claims 18-24 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step.

Claims 18-24: for similar reasons as put forward concerning dependent apparatus-

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claims 2-16, the subject-matter of dependent method-claims 18-24 cannot be considered as inventive.

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6). The features of the preamble of claim 1 are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).